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## ABSTRACT

An article of manufacture comprising an optical-ready substrate made of a first semiconductor layer, an insulating layer on top of the first semiconductor layer, and a second semiconductor layer on top of the insulating layer, wherein the second semiconductor layer has a top surface and is laterally divided into two regions including a first region and a second region, the top surface of the first region being of a quality that is sufficient to permit microelectronic circuitry to be formed therein and the second region including an optical signal distribution circuit formed therein, the optical signal distribution circuit made up of interconnected semiconductor photonic elements and designed to provide signals to the microelectronic circuit to be fabricated in the first region of the second semiconductor layer.